REPORT NO. 83-2-3
ALEXANDRIA FIELD OFFICE

3430
NOVEMBER 1982

EVALUATION OF SPOT DIEOUT ON THREE NORTHERN DISTRICTS OF THE NATIONAL FORESTS IN ALABAMA

by

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ABSTRACT

Mortality of pine was seen on upland sandy sites on the Shoal Creek R.D. of the Talladega NF, However, no pathological problem was identified.

Annosus root rot was identified on both slash and loblolly pines on both Ranger Districts of the Bankhead National Forest. Extensive areas of deep, sandy loam soil led to speculation that there is potential for serious loss resulting from this disease. It is recommended that an intensive ground survey, stratified to emphasize high hazard areas, be made on this Forest.

INTRODUCTION

Over the past few years several prescriptions have been written on both the Bankhead and Talladega NF which recommended regeneration and planting to loblolly pine. The condition class of these stands was recorded as "shortleaf-littleleaf disease." While crown thinning had been observed, the symptom pattern described was not consistent with littleleaf disease.

Visits were made to two suspect sites on the Shoal Creek R.D. of the Talladega NF and to several sites on the Bankhead NF (both Bankhead and Black Warrior R.D.'s). Soil samples were taken and general field observations were recorded.

OBSERVATIONS AND RESULTS

The soil at all sites was well drained, sandy to sandy loam at least 12" deep. On the Shoal Creek there was a significant amount of rocky intrusion but the soil was not typical of high hazard littleleaf sites. Soils seen on the Bankhead were Nauvoo and Savanah sandy loams. None of the sites had high clay content or grey subsoil nor were they eroded.

Some trees on all sites visited showed symptoms of decline. In no case did we see the typical yellowing and shortening of needles indicative of littleleaf disease. Symptoms seen on all sites were crown thinning and needle tufting at branch ends. On the Bankhead severely reduced growth (based on increment cores taken from live trees), wind breakage of snags 6 inches to 2 feet above ground level, and mortality were sound both in pockets and scattered through the stand.

Fresh, robust sporophores of Heterobasidion annosum (Fr.) Bref. were found on several stumps and dead trees in the Bankhead RD (Comp. 170 Stand 3) and Black Warrior RD (Comp. 172 Stand 9). Southern pine beetles had been active in the area and controlled in the latter stand.

CONCLUSIONS AND RECOMMENDATIONS

No evidence of littleleaf disease was observed at any of the sites visited.

No pathological condition was seen on the two sites on the Shoal Creek R.D. The condition there appeared to be one of physiological maturity based on site/species combination. Therefore, regeneration and conversion to loblolly pine in this area may be a viable alternative.

On the Bankhead NF the finding is slightly different. Annosus root rot, a potentially devastating problem, is present and causing mortality in both shortleaf and loblolly pines. This loss, on sites which are deep sandy loams, is reason for serious concern. Of equal or greater concern are: (1) the unquantified growth loss resulting from this root disease, and (2) the potential for southern pine beetle attack on these disease weakened trees leading to a serious SPB outbreak in these areas. Regeneration and conversion to loblolly pine in these situations is questionable due to loblolly's high susceptibility to annosus root rot.

Another alternative, planting longleaf pine (which is resistant to this disease), is also an available management strategy for high hazard annosus sites. Where silviculturally appropriate, longleaf pine is often the best choice for the deep sand or sandy-loam high hazard sites.

Preventive measures need to be taken at the time of thinning in this area. Stumps are the normal entry point for the annosus root rot fungus into an existing stand. Thinning, which creates large numbers of fresh stumps scattered throughout the residual stand, is the time of greatest concern and represents the greatest opportunity for prevention of this disease.

In areas where annosus root rot is not active, borax (applied as a powder to the fresh stump surfaces) prevents entry of the fungus.

In those areas where annosus root rot is already present borax should NOT be used. Phlebia gigantea (Fr.) Donk is a fungus which competes successfully with, and limits the growth of, H. annosum. This fungus should be applied to fresh cut stumps in those areas where annosus root rot is active. Application is accomplished by placing (commercially available) spores of this fungus in water and spraying this suspension on the fresh stump surfaces.

Benefit/cost analysis of treatments applied in high hazard annosus areas at the time of thinning normally show benefits far exceeding costs even where only that loss resulting from mortality is considered and minimized.

Prevention (long-term) must also be considered at the time of site regeneration. Current data suggests that susceptible species of pine (loblolly, slash and shortleaf) normally will suffer 3-5% mortality of planted seedlings during the first five years after planting. Further mortality is not expected until the time of thinning. Where 5% loss is acceptable no changes need be made in prescription. Slight overplanting is the recommendation to compensate for this loss if a 5% loss leaves an unacceptable level of stocking.

Based on the results of this brief evaluation, an intensive stratified survey of the Bankhead NF is recommended. Currently available soils maps of the Forest will be used to stratify the Forest into high, low and unknown hazard areas. A survey to determine the current status of this disease should then be carried out using the soil stratification to place emphasis on areas with high hazard soils.

More specific information relating to future management implications of this problem will be formulated based on the results of this survey.

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